Claims:

1. A method for channel capacity estimation comprising:

    obtaining a measured TDR echo;

    determining a theoretical TDR echo for a plurality of loop lengths;

    estimating the equivalent TDR length based on an optimization;

    updating the equivalent TDR length; and

    utilizing the updated TDR length to predict one or more of the upstream and downstream data rates.

2. The method of claim 1, further comprising determining a time shift between the measured TDR echo and the theoretical TDR echo.

3. The method of claim 2, wherein the measured TDR echo is a measured far-end echo, and the theoretical TDR echo is a theoretical far-end echo.

4. The method of claim 1, wherein the updating step is based on a time shift and an equivalent TDR length.

5. The method of claim 1, wherein the methodology is applicable single gauge straight loops, multi-section loops with different gauges and loops with bridged taps.

6. A method comprising:

    estimating a physical loop length based on an equivalent TDR loop length and a time shift between a measured echo and an echo from an equivalent loop.

7. A channel capacity estimation system comprising:

    means for obtaining a measured TDR echo;

    means for determining a theoretical TDR echo for a plurality of loop lengths;

    means for estimating the equivalent TDR length based on an optimization;

    means for updating the equivalent TDR length; and

    means for utilizing the updated TDR length to predict one or more of the upstream and downstream data rates.

8.   The system of claim 7, further comprising means for determining a time shift between the measured TDR echo and the theoretical TDR echo.

9.   The system of claim 8, wherein the measured TDR echo is a measured far-end echo, and the theoretical TDR echo is a theoretical far-end echo.

10.   The system of claim 7, wherein the updating is based on a time shift and an equivalent TDR length.

11.   The system of claim 7, wherein the system is adapted to estimate channel capacity for single gauge straight loops, multi-section loops with different gauges and loops with bridged taps.

12.   A system comprising:

means for estimating a physical loop length based on an equivalent TDR loop length and a time shift between a measured echo and an echo from an equivalent loop.

13.   An information storage media having stored thereon information configured to estimate channel capacity comprising:

information that obtains a measured TDR echo;

information that determines a theoretical TDR echo for a plurality of loop lengths;

information that estimates the equivalent TDR length based on an optimization;

information that updates the equivalent TDR length; and

information that utilizes the updated TDR length to predict one or more of the upstream and downstream data rates.

14.   An information storage media having stored thereon information configured to estimate a physical loop length based on an equivalent TDR loop length and a time shift between a measured echo and an echo from an equivalent loop.

15.   A channel capacity estimation system comprising:

a TDR echo measurement module;

a theoretical TDR echo determination module adapted to determine a theoretical TDR echo for a plurality of loop lengths;

an equivalent TDR length estimation module adapted to estimate the equivalent TDR length based on an optimization; and

an upstream and downstream data rate prediction module adapter to utilize an updated TDR length to predict one or more of the upstream and downstream data rates.

16.   The system of claim 15, further comprising a controller adapted to determine a time shift between a measured TDR echo and the theoretical TDR echo.

17.   The system of claim 16, wherein the measured TDR echo is a measured far-end echo, and the theoretical TDR echo is a theoretical far-end echo.

18.   The system of claim 15, wherein the system is adapted to estimate channel capacity for single gauge straight loops, multi-section loops with different gauges and loops with bridged taps.

19.   A system comprising a controller adapted estimate a physical loop length based on an equivalent TDR loop length, determined by an equivalent TDR length determination module, and a time shift between a measured echo and an echo from an equivalent loop.